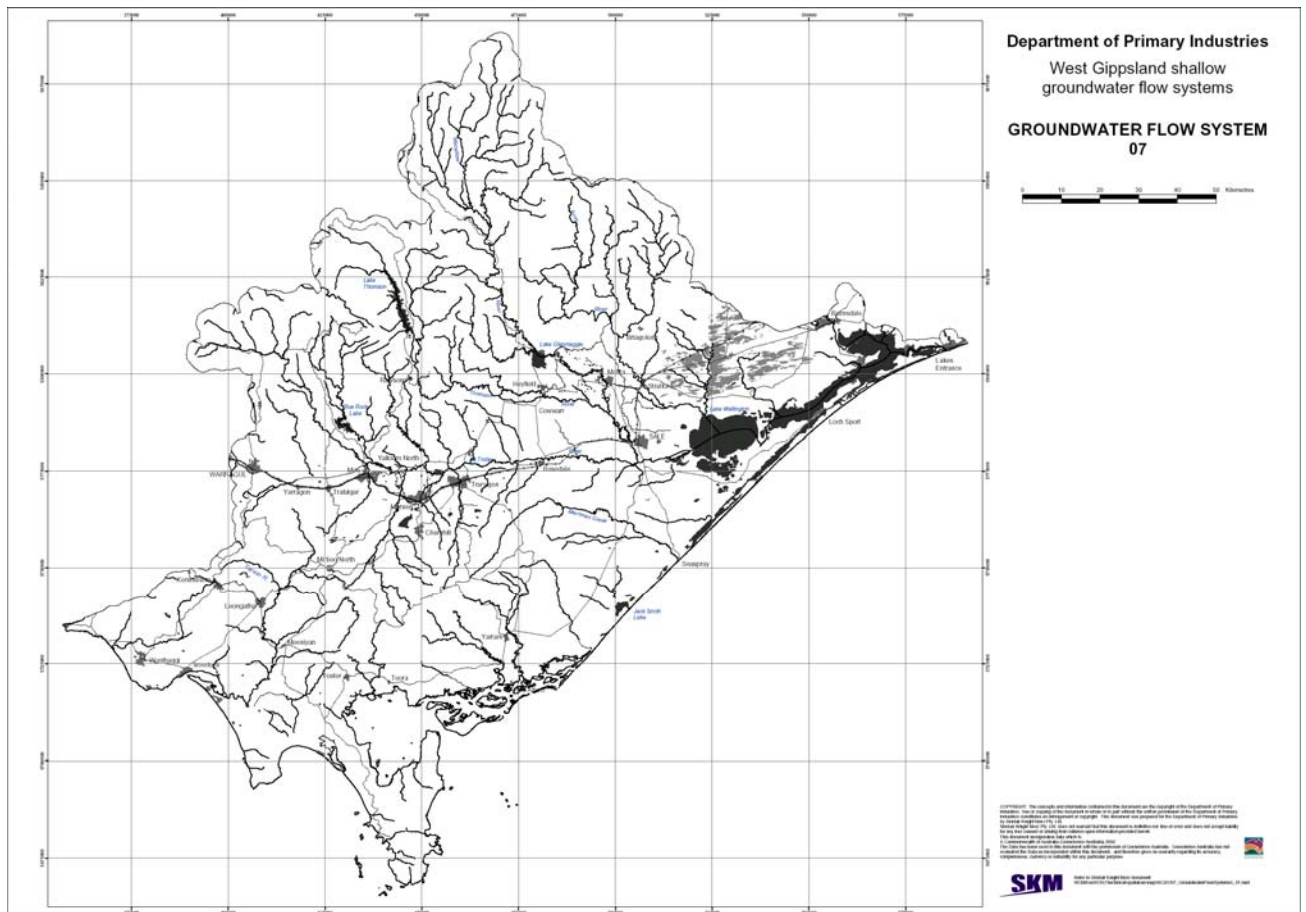


## GFS 7: Quaternary sediments – Upper Bengworden region

### 1. GFS definition



<b>Geology constraint:</b>	Qpd
<b>Slope Constraint:</b>	None
<b>Area constraint:</b>	North of Paynesville – Perry Bridge line and east of Avon River
<b>Rationale for choice of GFS:</b>	SKM (2002) showed that the dunes in the Upper Bengworden area have clay cores and are not likely to be connected to the intermediate scale Quaternary Sands aquifer. These dunes are likely to exhibit local flow systems
<b>GFS priority:</b>	Moderate

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### 2. The salinity problem

**Salinity occurrence:** In low lying interdunal areas (Source: West Gippsland Land Salinity GIS layer, SKM (2002))

**Assets being affected:** Agricultural land (sheep and cattle) and roads (SKM (2002), WGCMA (2005))

**Area of mapped land salinity:** None (Source: West Gippsland Land Salinity GIS layer, SKM(2002))

**Area of primary and secondary land salinity:** None (Source: West Gippsland Land Salinity GIS layer, SKM (2002))

**Area of wetland salinity:** No known wetland salinity

**Surface water salinity:** Surface water monitoring stations with <100% attainment of 90 percentile salinity SEPP: Perry River at Perry Bridge (35%)

**Salinity process:** Recharge on the highly permeable sandy soils (especially dunes) causing discharge in the interdunal swales (Source: SKM (2002))

**Current area of less than 2m depth to water table:** 16ha <2m (West Gippsland DTWT GIS layer, SKM (2002))

**Groundwater salinity:** Low to moderate. Areas adjacent to and north of Bengworden Rd generally <1,000 to 3,000  $\mu\text{S}/\text{cm}$ . (Source: SKM (2002))

**Land salinity trend:** Possibly stabilised or getting slightly worse

**Groundwater level trend:** Current trend: stable or falling due to below average rainfall over last 7 years. Analysis of hydrographs show that groundwater not yet in equilibrium with expected future rising trend of 24mm/yr assuming return to average rainfall. (Source: SKM (2002))

### 3. Landscape attributes

**Area:** Quaternary dunes overlying Tertiary sediments

**Geology:** Quaternary dunes

**Topography:** Low dunal systems

**Soil permeability:** Predominantly moderate with some areas of low and very low permeability.

(Source: West Gippsland Soil Permeability GIS layer)

**Annual Rainfall:** 600-800mm on average. (Source: West Gippsland Annual Rainfall GIS layer)

**Annual Evaporation:** 900-975mm on average. (Source: West Gippsland Annual Evaporation GIS layer)

**Landuse:** Predominantly production with areas of native vegetation and a small area of forestry. (Source: West Gippsland Landuse GIS layer)

## GFS 7: Quaternary sediments – Upper Bengworden region

- **Figure 18: Quaternary dunes north of Bengworden Road between Meerlieu and Perry Bridge**



### 4. Hydrogeology

**Geology:** Sands, gravels, clays

**Aquifer type:** Unconsolidated sediments

**Hydraulic conductivity:** ~2 to 5 m/day (Source: SKM (2002))

**Aquifer transmissivity:** Low to moderate (~7.8m<sup>2</sup>/day in Deighton's Creek area) (Source: SKM (2002))

**Aquifer storage coefficient:** Unknown

**Hydraulic gradient:** Unknown

**Yield:** Variable but generally low

**Temporal recharge distribution:** Rising in wet years, falling in dry years (Source: SKM (2002))

**Spatial recharge distribution:** Highest recharge on sandy rises and lowest in interdunal swales. Potential recharge has been mapped (SKM, 2002). (Source: SKM (2002))

**Recharge estimate:** Unknown

**Aquifer uses:** Stock and domestic

**Scale of groundwater flow path:** Local flow systems

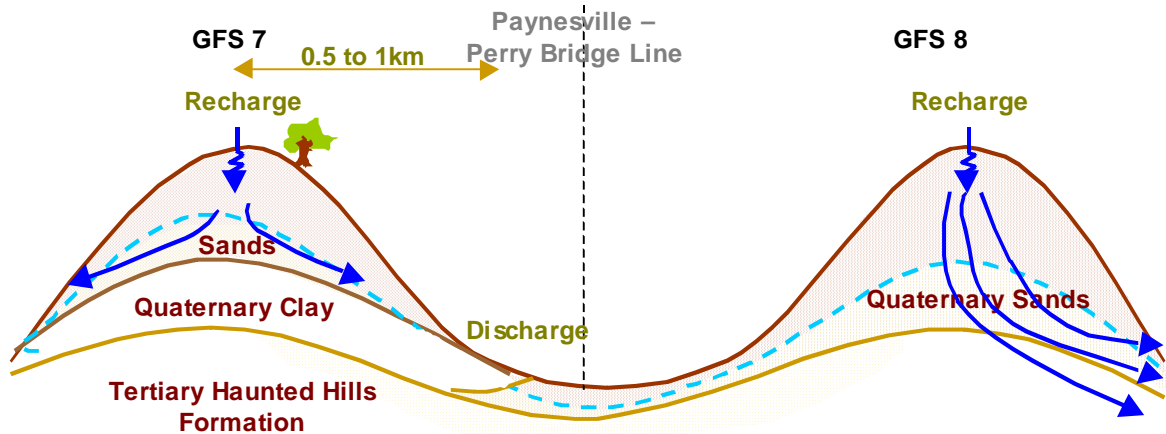
**Responsiveness to land management:** High

**National GFS type most like (ref Coram et al., 1998):** Local 6 – Discharge from perched aquifers

**Groundwater flow between GFSs:** Groundwater flow from GFS 7 (dunes) to GFS10 (interdunal swales) in the Bengworden region

## GFS 7: Quaternary sediments – Upper Bengworden region

### 5. Conceptual model of recharge discharge relationship



### 6. Salinity Management Options

**Current salinity management:** No active management of down-gradient salinity issues – some tree planting for farm forestry and biodiversity purposes which may reduce groundwater recharge and down-gradient salinity

**Recharge control options:**

Trees and perennial pastures planted on tops of the dunes are an option for reducing future down-gradient salinity – no visible evidence of current salinity (Source: SKM (2002) and WGCMA (2005))

<i>Pasture or crop potential</i>	<i>Trees for biodiversity potential</i>	<i>Trees for forestry potential</i>	<i>Surface drainage potential</i>	<i>Irrigation management potential</i>
Weak	Strong	Strong	Weak	Strong

**Groundwater discharge options:** Groundwater pumping not likely to be a viable option due to low gross margin of agricultural land and lack of suitable shallow aquifer (Source: SKM (2002) and WGCMA (2005))

<i>Public groundwater control pumping potential</i>	<i>Private groundwater pumping potential</i>	<i>Tile and mole drain potential</i>	<i>Break of slope tree planting potential</i>
Weak	Weak	Weak	Moderate

**Living with salt options:** None

**Conflicts with other NRM programs:** None

**Synergies with other NRM programs:** Strong synergy with farm forestry and biodiversity programs (Source: WGCMA (2005))

## GFS 7: Quaternary sediments – Upper Bengworden region

- **Figure 19: Salinity east of Tom's Creek**

